

Amendments to the Drawings:

The attached replacement sheets of drawings includes changes to Figs. 1-5 and replaces the original sheet including Fig. 6.

In Figs. 1-5 the legend "Prior Art" has been added as requested by the Examiner.

Attachments following last page of this Amendment:

Replacement Sheets (3 pages)

REMARKS

Reconsideration and allowance of above referenced application are respectfully requested.

Figures 1-5 stand objected to as not being designated as prior art. These figures are appropriately amended herein.

The disclosure stands objected to due to informalities and these informalities are corrected herein.

Claims 1, 2 and 4-8 stand rejected as being anticipated by Schindler. Claims 1-3 and 5-8 stand rejected as being anticipated by Lee. In response to this rejection, a number of claims are amended, and new claims 10-13 are added herein.

New claims 11 and 12 specify that the electrically conductive material serves as a dummy electrode for electrically connecting the ferroelectric material 39 formed on the adjacent pairs of electrode elements 33. Basis for this feature may be found on page 7, lines 3-6 of the description as well as Figures 10-11.

New claim 9 provides the step of planarizing the electrode elements, ferroelectric layer and support material. Basis for this may be found at page 6, line 29 to page 7, line 1 of the description.

New claim 10 provides the step of depositing an Al_2O_3 layer on the planarized flat surface. Basis for this may be found at page 7, line 1 to 2 of the description.

Claims 1, 2 and 4-8 are rejected under 35 USC 102 over US 6,346,424 (Schindler).

By way of this response, amended independent claim 1 is amended in three ways: firstly to incorporate the features of claims 2 and 4, secondly to specify that the method/device defined in the claims pertains to a vertical ferrocapacitor structure and thirdly to include the step of removing the electrically conductive material and ferroelectric material above the electrode elements so that the ferroelectric material is arranged as layers formed on the lateral sides of the electrode elements. Basis for these amendments may be found at claim 8 as filed as well as Figures 10-12.

Fig. 1 of Schindler discloses fabricating ferroelectric capacitors comprising forming first electrode elements 8 over a substructure such that the first electrode elements 8 are in electrical contact with conductive connections 7 extending through the substructure. A ferroelectric layer 10 is then deposited over the first electrode elements 8 followed by a second electrode layer 11.

Therefore, the capacitor structure disclosed in Schindler is not a vertical capacitor structure as required in claim 1

since in addition to ferroelectric material 10 sandwiched horizontally between the electrodes (11 and 12), there is also ferroelectric material sandwiched vertically. There is also no description of removing ferroelectric material and electrically conductive material over the electrode elements (i.e. first electrode elements 8) which are in contact with the conductive elements extending through the substructure. Furthermore, since Schindler requires electrically conductive material over the first electrodes to form the upper electrodes, there is also no motivation for a skilled addressee to modify its teachings to arrive at the claimed invention. In view of these reasons, we submit that amended claim 1 is patentable over Schindler. Accordingly, since claims 3 and 5-8 are dependent upon claim 1 they are also patentable over Schindler.

Regarding the independent device claim 8, we have also amended it in a manner similar to claim 1. In particular, revised claim 8 specifies that, in the final ferrocapacitor structure, there is no ferroelectric material and electrically conductive material over the upper surface of the electrode elements, a feature which is not true of Schindler. Since the remaining claims 10-12 are dependent upon new claim 9, they are also patentable over Schindler.

The rejection also alleges that former claims 1 to 3 and 5 to 8 are unpatentable over US 6,699,725 (Lee). We respectfully disagree.

Fig. 7 of Lee discloses forming first electrodes 17 which are in electrical contact with contact plugs 13 extending through a substructure. After this, a barrier layer 19 is placed over the first electrodes followed by a seed layer 23, which the rejection considers to be a ferroelectric layer (incorrectly we believe) and an overlying first ferroelectric layer 252. The barrier layer 19, seed layer 23 and first ferroelectric layer are etched back to expose the top surfaces of the first electrodes 17. A second ferroelectric layer 27 which serves as a capacitor dielectric is then formed over the planarized structure followed by an overlying second electrode 29.

Therefore, the resulting ferrocapacitor disclosed in Lee is again not a vertical capacitor as required by amended claims 1 and 8. This is because the first and second electrodes (17 and 29) are spaced vertically, not horizontally, and the second ferroelectric layer 27 is sandwiched vertically between them. Therefore, the ferroelectric material and electrically conductive material are not removed from the upper surface of the electrode elements (features of claims 1 and 9). Apart from this, claims 1 and 8 also define that the electrically


conductive material is deposited above the ferroelectric material into gaps between the electrode elements. This feature is also not found in Lee as the first ferroelectric layer 252 forms the uppermost layer in the structure sandwiched between the first electrodes 17 (see Fig. 10 of Lee). Therefore, claims 1 and 8 as well as the remaining claims which are dependent upon them are also patentable over Lee.

Applicant asks that all claims be allowed. Applicant believes no fee is due however, please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: _____

3/10/05



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